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Submissions from entities in the United Nations system, international organizations and other stakeholders on their efforts in 2021 to implement the outcomes of the WSIS

Submission by

World Meteorological Organization

This submission was prepared as an input to the report of the UN Secretary-General on "Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels" (to the 25th session of the CSTD), in response to the request by the Economic and Social Council, in its resolution 2006/46, to the UN Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the WSIS as part of his annual reporting to the Commission.

World Meteorological Organization (WMO) Submission to WSIS Report 2021

Part 1: Executive Summary

The World Meteorological Organization (WMO) is committed to promoting and supporting the implementation of ICTs for improving the global, regional and national production, exchange and distribution of information, forecasts and warnings on weather, climate, and water. In this way, WMO contributes to the World Summit on the Information Society (WSIS) action line on e-environment and its call "to establish monitoring systems, using ICTs, to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries, LDCs and small economies."

ICT systems that collect weather, climate and water information from around the globe, underpin the delivery of information to the public, businesses and governments. They also support the production of analyses, forecasts and warnings. WMO continues to develop its WMO Information System (WIS) to allow and facilitate wider accessibility to this information.

ICTs are being harnessed by national meteorological and hydrological services around the world to improve the services they offer to citizens. The demand for accessible and accurate services will continue to grow in the years ahead. To respond effectively to the new human vulnerabilities and socio-economic trends of the 21st century, national meteorological and hydrological services need greater recognition from policymakers and to be further integrated into national development plans. This will help ensure that all countries reduce the risks and maximize the opportunities linked to weather, climate and water, towards implementation of the 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction.

Part 2: Analytical overview

WMO achieves its objectives by facilitating international agreement among National Meteorological and Hydrological Services (NMHSs) around the world. Challenges to the use of ICT collaboration tools for this purpose include great variability in the quality and affordability of ICT infrastructure available to various countries, low uptake of tools that are not a part of the daily working environment of the collaborators, and security constraints that restrict some organizations' access to collaboration web sites.

The WMO Information System (WIS) provides a major upgrade to the way weather services and their partners manage and share weather, climate, water, marine and related environmental information. WIS exploits the most recent advances in information and communication technologies and reduces the costs of exchanging information. WIS gives users outside the meteorological community, free access to an expanded range of information. As a result, WMO can now collaborate more fully with United Nations and other international partners on implementing common programmes and activities, such as the Global Framework for Climate Services (GFCS).

Climate information and services rely on data to conduct analytical studies, feed model predictions and calibrate other types of data, such as data from remote-sensing

platforms. This requires longer-term observations and data of higher quality than data used for ordinary weather forecasting systems. WMO seeks to ensure that these criteria are met at global and national levels, using best-available technologies, standards and tools. WMO is currently leveraging WIS by developing the functional architecture of the Climate Service Information System (CSIS). CSIS functions include managing historical data and providing climate forecasts, long-term change predictions and projections.

Part 3: Innovation and Progress, plans

1. WMO's Commission for Observation, Infrastructure and Information Systems (INFCOM) is responsible for the development and implementation of globally coordinated systems for acquiring, processing, transmitting and disseminating Earth system observations, and related standards; coordination of the production and use of standardized analysis and model forecast fields; and development and implementation of sound data and information management practices for all WMO Programmes and their associated application and services areas. The WIS 2.0 Implementation Plan, and the WIS 2.0 Functional Architecture recommended by INFCOM were approved by the Executive Council in June 2021. The Executive Council also identified a list of WIS2.0 demonstration projects, which cover new application programmes areas such as marine meteorological and hydrological data exchange.

WIS 2.0 will be a collaborative system of systems using Web-architecture and open standards to provide simple, timely and seamless sharing of trusted weather, water and climate data and information through services. It will provide a "virtual one-stop-shop" for weather, water and climate information and services by providing an environment in which data can be managed, documented, discoverable, accessible and easy to use. It will also standardize information management, so data can be relied upon.

2. The Extra-ordinary session of the World Meteorological Congress (Cg-Ext 2021) in October 2021 adopted three landmark initiatives to dramatically strengthen the world's weather and climate services through a systematic increase in exchange of observational data and data products:-

i)**The Unified Data Policy** which will enhance the free and unrestricted quantity and quality of Earth System data. The new data policy will enhance the socio-economic value of weather, climate and hydrological services considerably. The previous data policy from 1995 was outdatedand did not take into account the modern ground-based, balloon borne, satellite, radar and aircraft observing systems;

ii) **The Global Basic Observing Network** (GBON) standard that helps to identify and address the major gaps in the basic observing systems (notably in Africa, Pacific and Caribbean Islands as well as in some parts of Latin America). It is expected to lead to enhancement of the global real-time weather observing system, which is critical for disaster risk reduction and services related to public safety, agriculture, aviation, marine and ground transportation, infrastructure and businesses, and

iii) **The Systematic Observations Financing Facility (SOFF)** which is a new financing mechanism to support the establishment and maintenance of additional stations in less developed and small island developing states, where data gaps are having a major

negative impact on the accuracy of weather and climate services. Additional investments by developed countries will enhance the accuracy of weather forecasts worldwide.

3. In collaboration with the European Centre for Medium-Range Weather Forecasts (ECMWF), WMO developed a global data quality monitoring system (WDQMS). The current operational version of WDQMS monitors the availability and quality of observational data based on near-real-time Numerical Weather Prediction (NWP) monitoring information from four global NWP centres. Its webtool links availability and quality of surface-based observational data from those monitoring centres with the metadata and user requirements on global observing systems.

4. WMO's Observing Systems Capability Analysis and Review tool (OSCAR) is a global repository of surface and space observing system capabilities. It is a web-based tool in which metadata is registered, managed and archived. It records observing system requirements and allows critical reviews of how well actual capabilities address requirements. It allows users to better understand their data. Knowing where, how and why observations are made helps with better planning of network evolution and shows how networks change over time. This tool is a component of the Rolling Requirements Review process and provides information important to the WIGOS Data Quality Monitoring System. The latest version of the its Surface component was released in October 2021.

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